

What is claimed is:

1. ~~A crop harvesting header configured for attachment to the mobile~~  
frame of a harvesting machine, said header comprising:

a crop cutting assembly defining a laterally extending cutting zone along which  
crop material is severed from the ground by the cutting assembly;

a pair of laterally extending crop conditioning rolls cooperatively defining a nip  
therebetween that is spaced upwardly and rearwardly from the cutting  
zone; and

a crop conveying element having at least a portion thereof that is moveable  
upwardly and rearwardly between the cutting zone and the nip to convey  
crop cut by the cutting assembly toward the nip.

2. A crop harvesting header as claimed in claim 1,  
said crop cutting assembly including a series of rotary cutters rotatable about  
individual, upright axes.

3. A crop harvesting header as claimed in claim 1;  
header framework defining a laterally extending discharge opening spaced  
rearwardly from the cutting zone, with the opening being configured to  
receive cut crop from the series of cutters,  
said cutting assembly projecting beyond the ends of the discharge opening to  
present a pair of outboard cutter sections; and  
a pair of crop conveying assemblies, each disposed over a respective one of the  
outboard cutter sections for conveying crop cut by the respective one of  
the outboard cutter sections rearwardly and inwardly to the discharge  
opening.

4. A crop harvesting header as claimed in claim 3,  
each of said crop conveying assemblies including a plurality of laterally spaced  
impeller cages rotatable about individual, upright axes,  
each of said impeller cages presenting a front moveable boundary that is spaced  
forwardly of the adjacent inwardly spaced impeller cage.

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A crop harvesting header as claimed in claim 4,  
said crop cutting assembly including a series of rotary cutters rotatable about  
individual, upright axes,  
each outboard cutter section including a first cutter and an inwardly spaced  
second cutter,  
said plurality of impeller cages including a first impeller cage mounted to the first  
cutter for rotational movement therewith, a second impeller cage  
mounted to the second cutter for rotational movement therewith, and an  
intermediate impeller cage suspended from the header framework  
between the first and second impeller cages.

15  
A crop harvesting header as claimed in claim 1,  
said crop cutting assembly and said conveying element defining a downwardly  
open area therebetween.

20  
A crop harvesting header as claimed in claim 1,  
said conveying element comprising a laterally extending, rotatable conveying  
roller having an outer periphery defining the upwardly and rearwardly  
moveable portion of the conveying element.

25  
A crop harvesting header as claimed in claim 6,  
said conveying roller and said cutting assembly presenting a downwardly open  
area therebetween.

30  
A crop harvesting header as claimed in claim 6,  
said conveying roller including at least one helical rib extending along the roller  
periphery and having opposite inclination on either side of the midpoint  
of the conveying roller.

A crop harvesting header as claimed in claim 6,  
said conveying roller having a relatively smaller diameter than the conditioning  
rolls.

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~~10~~ <sup>9</sup> 18. A crop harvesting header as claimed in claim ~~18~~,  
 said conditioning rolls being in a stacked relationship to present an upper  
 conditioning roll and a lower conditioning roll,  
 said lower conditioning roll being rotatable about a lower conditioning roll axis,  
 said conveying roller being rotatable about a conveying roller axis that is lower  
 than the lower conditioning roll axis.

~~44~~ <sup>110</sup> 19. A crop harvesting header as claimed in claim ~~14~~,  
 said cutting zone being substantially planar and generally vertically aligned with  
 the conveying roller axis.

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13. A crop harvesting machine comprising:

- a crop cutting assembly defining a laterally extending cutting zone along which crop material is severed from the ground by the cutting assembly;
- a pair of laterally extending crop conditioning rolls cooperatively defining a nip therebetween that is spaced upwardly and rearwardly from the cutting zone; and
- a crop conveying element having at least a portion thereof that is moveable upwardly and rearwardly between the cutting zone and the nip to convey crop cut by the cutting assembly toward the nip.

~~14. A crop harvesting machine as claimed in claim 13,~~

- said crop cutting assembly including a series of rotary cutters rotatable about individual, upright axes.

- 13 15. A crop harvesting machine as claimed in claim 13,
- framework defining a laterally extending discharge opening spaced rearwardly from the cutting zone, with the opening being configured to receive cut crop from the series of cutters,
  - said cutting assembly projecting beyond the ends of the discharge opening to present a pair of outboard cutter sections; and
  - a pair of crop conveying assemblies, each disposed over a respective one of the outboard cutter sections for conveying crop cut by the respective one of the outboard cutter sections rearwardly and inwardly to the discharge opening.

- 14 16. A crop harvesting machine as claimed in claim 13,
- each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes,
  - each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

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17. A crop harvesting machine as claimed in claim 16, said crop cutting assembly including a series of rotary cutters rotatable about individual, upright axes, each outboard cutter section including a first cutter and an inwardly spaced second cutter, said plurality of impeller cages including a first impeller cage mounted to the first cutter for rotational movement therewith, a second impeller cage mounted to the second cutter for rotational movement therewith, and an intermediate impeller cage suspended from the framework between the first and second impeller cages.

18. A crop harvesting machine as claimed in claim 13, said crop cutting assembly and said conveying element defining a downwardly open area therebetween.

19. A crop harvesting machine as claimed in claim 18, said conveying element comprising a laterally extending, rotatable conveying roller having an outer periphery defining the upwardly and rearwardly moveable portion of the conveying element.

20. A crop harvesting machine as claimed in claim 19, said conveying roller and said cutting assembly presenting a downwardly open area therebetween.

21. A crop harvesting machine as claimed in claim 19, said conveying roller including at least one helical rib extending along the roller periphery and having opposite inclination on either side of the midpoint of the conveying roller.

22. A crop harvesting machine as claimed in claim 19, said conveying roller having a relatively smaller diameter than the conditioning rolls.

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<sup>31</sup> ~~23~~ <sup>20</sup> A crop harvesting machine as claimed in claim ~~22~~,  
 said conditioning rolls being in a stacked relationship to present an upper  
 conditioning roll and a lower conditioning roll,  
 said lower conditioning roll being rotatable about a lower conditioning roll axis,  
 said conveying roller being rotatable about a conveying roller axis that is lower  
 than the lower conditioning roll axis.

<sup>31</sup> ~~22~~ <sup>24</sup> A crop harvesting machine as claimed in claim ~~23~~,  
 said zone being substantially planar and generally vertically aligned with the  
 conveying roller axis.

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23 25. A crop harvesting machine comprising:  
 a mobile frame; and  
 a harvesting header supported on the frame for harvesting crop as the frame  
 moves across a field, said header including--  
 5 a cutter bed extending across the path of travel of the frame and  
 including a series of rotary cutters rotatable about individual,  
 upright axes,  
 header framework defining a laterally extending discharge opening  
 spaced rearwardly from the cutter bed, with the opening being  
 10 configured to receive cut crop from the series of cutters,  
 a pair of crop conditioning rolls spanning the discharge opening and  
 defining a nip therebetween that is spaced upwardly and  
 rearwardly from the cutter bed, and  
 a laterally extending crop conveying roller located between the cutter  
 15 bed and the nip,  
 said conveying roller being rotatable in a direction to move crop from  
 the cutter bed toward the nip.

24 26. A crop harvesting machine as claimed in claim 23,  
 20 said frame carrying a power source for propelling the frame across the field.

25 25 27. A crop harvesting machine as claimed in claim 23,  
 said series of rotary cutters including two sets of outboard cutters, with each of  
 the sets being located adjacent an end of the cutter bed and substantially  
 25 outboard of the discharge opening; and  
 a pair of crop conveying assemblies, each disposed over a respective one of the  
 sets of outboard cutters for conveying crop cut by the respective one of  
 the sets of outboard cutters rearwardly and inwardly to the discharge  
 30 opening.

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<sup>25</sup>  
~~215~~ <sup>28</sup> A crop harvesting machine as claimed in claim <sup>25</sup>~~27~~,  
each of said crop conveying assemblies including a plurality of laterally spaced  
impeller cages rotatable about individual, upright axes,  
each of said impeller cages presenting a front moveable boundary that is spaced  
forwardly of the adjacent inwardly spaced impeller cage.

<sup>26</sup>  
~~27~~ <sup>29</sup> A crop harvesting machine as claimed in claim <sup>26</sup>~~28~~,  
each set of outboard cutters including a first cutter and an inwardly spaced  
second cutter,  
said plurality of impeller cages including a first impeller cage mounted to the first  
cutter for rotational movement therewith, a second impeller cage  
mounted to the second cutter for rotational movement therewith, and an  
intermediate impeller cage suspended from the framework between the  
first and second impeller cages.

<sup>27</sup>  
~~28~~ <sup>30</sup> A crop harvesting machine as claimed in claim <sup>27</sup>~~25~~,  
said cutter bed and said conveying roller defining a downwardly open area  
therebetween.

<sup>28</sup>  
~~29~~ <sup>31</sup> A crop harvesting machine as claimed in claim <sup>28</sup>~~25~~,  
said conveying roller including at least one helical rib extending along the roller  
periphery and having opposite inclination on either side of the midpoint  
of the conveying roller.

<sup>29</sup>  
~~30~~ <sup>32</sup> A crop harvesting machine as claimed in claim <sup>29</sup>~~25~~,  
said conveying roller having a relatively smaller diameter than the conditioning  
rolls.

<sup>30</sup>  
~~31~~ <sup>33</sup> A crop harvesting machine as claimed in claim <sup>30</sup>~~32~~,  
said conditioning rolls being in a stacked relationship to present an upper  
conditioning roll and a lower conditioning roll,  
said lower conditioning roll being rotatable about a lower conditioning roll axis,  
said conveying roller being rotatable about a conveying roller axis that is lower  
than the lower conditioning roll axis.

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<sup>331</sup>  
~~332~~ 34. A crop harvesting machine as claimed in claim <sup>331</sup>~~33~~,  
said cutter bed defining a substantially planar cutting zone,  
said conveying roller axis being generally vertically aligned with the cutting  
zone.

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